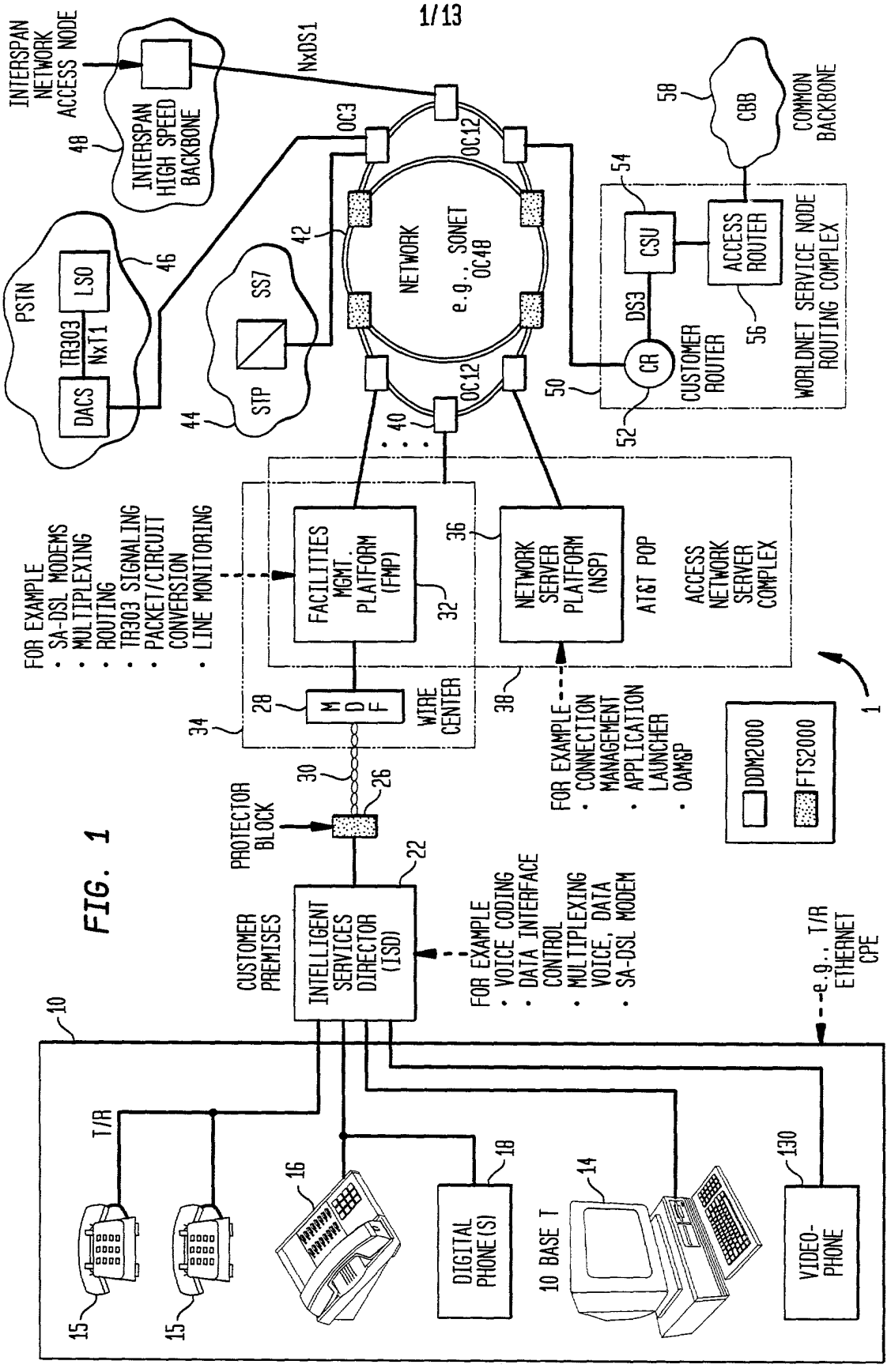

INTERSPAN NETWORK ACCESS NODE
48
INTERSPAN HIGH SPEED BACKBONE
NxDS1
OC3
OC12
NETWORK e.g., SONET OC48
OC12
58
CBB
COMMON BACKBONE
54
CSU
DS3
ACCESS ROUTER
56
WORLDNET SERVICE NODE ROUTING COMPLEX
CR
CUSTOMER ROUTER
50
52
PSTN
TR303
NxT1
LSO
DACS
46
SS7
STP
44
42
40
FACILITIES MGMT. PLATFORM (FMP)
32
36
NETWORK SERVER PLATFORM (NSP)
AT&T POP
ACCESS NETWORK SERVER COMPLEX
FOR EXAMPLE
• SA-DSL MODEMS
• MULTIPLEXING
• ROUTING
• TR303 SIGNALING
• PACKET/CIRCUIT CONVERSION
• LINE MONITORING
FOR EXAMPLE
• CONNECTION MANAGEMENT
• APPLICATION LAUNCHER
• OAM&P
DDM2000
FTS2000
1
34
28
M D F
WIRE CENTER
30
26
PROTECTOR BLOCK
22
CUSTOMER PREMISES
INTELLIGENT SERVICES DIRECTOR (ISD)
FOR EXAMPLE
• VOICE CODING
• DATA INTERFACE CONTROL
• MULTIPLEXING VOICE, DATA
• SA-DSL MODEM
e.g., T/R ETHERNET CPE
10
T/R
15
15
16
DIGITAL PHONE(S)
18
10 BASE T
14
VIDEO-PHONE
130

FIG. 1

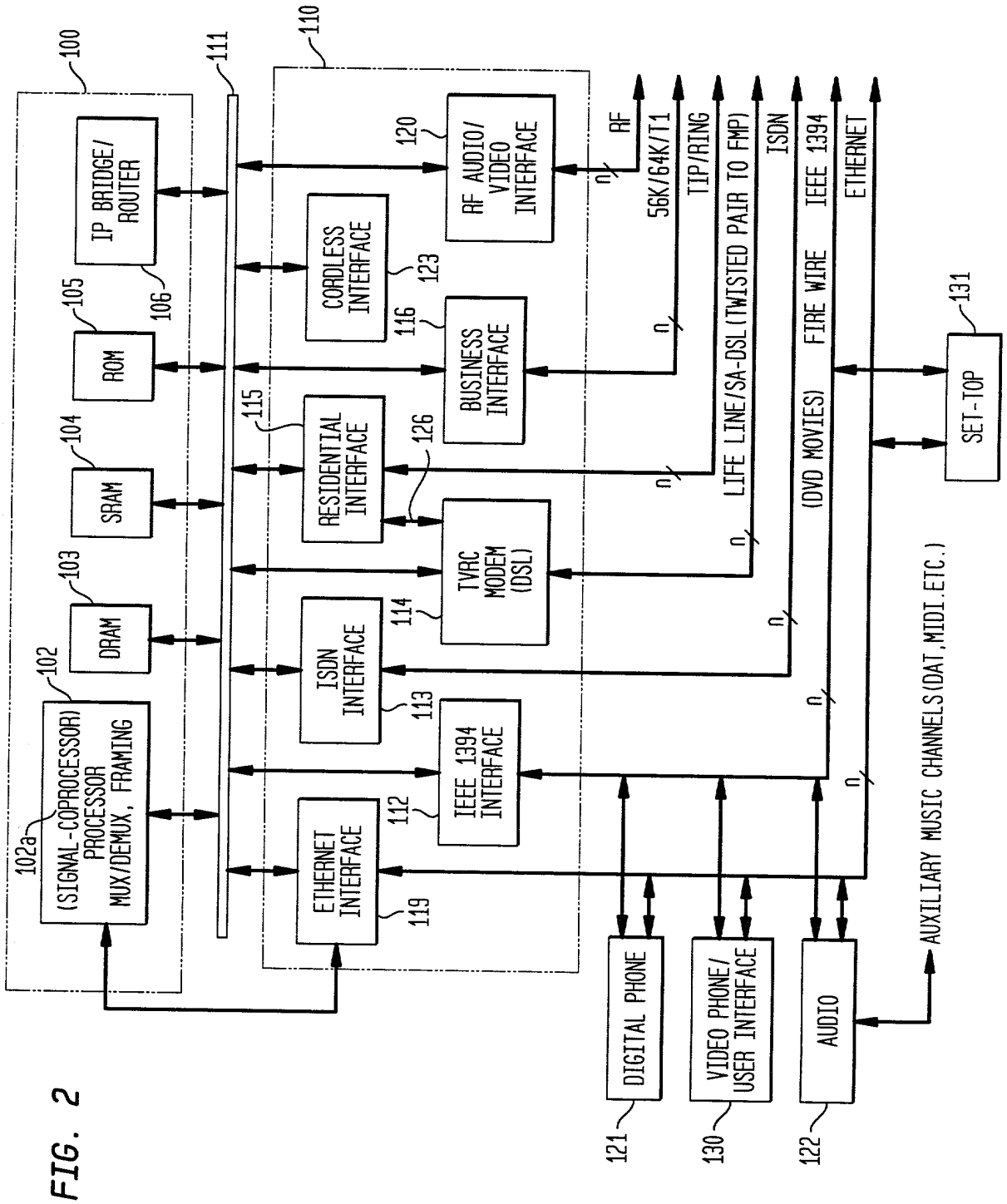

100
111
110
IP BRIDGE/ ROUTER
106
105
ROM
104
SRAM
103
DRAM
102
(SIGNAL-COPROCESSOR) PROCESSOR MUX/DEMUX, FRAMING
102a
ETHERNET INTERFACE
119
112
IEEE 1394 INTERFACE
113
ISDN INTERFACE
114
TVRC MODEM (DSL)
126
115
RESIDENTIAL INTERFACE
116
BUSINESS INTERFACE
123
CORDLESS INTERFACE
120
RF AUDIO/ VIDEO INTERFACE
RF
56K/64K/T1
TIP/RING
LIFE LINE/SA-DSL (TWISTED PAIR TO FMP)
ISDN
(DVD MOVIES) FIRE WIRE IEEE 1394
ETHERNET
131
SET-TOP
AUXILIARY MUSIC CHANNELS (DAT, MIDI, ETC.)
DIGITAL PHONE
121
VIDEO PHONE/ USER INTERFACE
130
AUDIO
122

FIG. 2

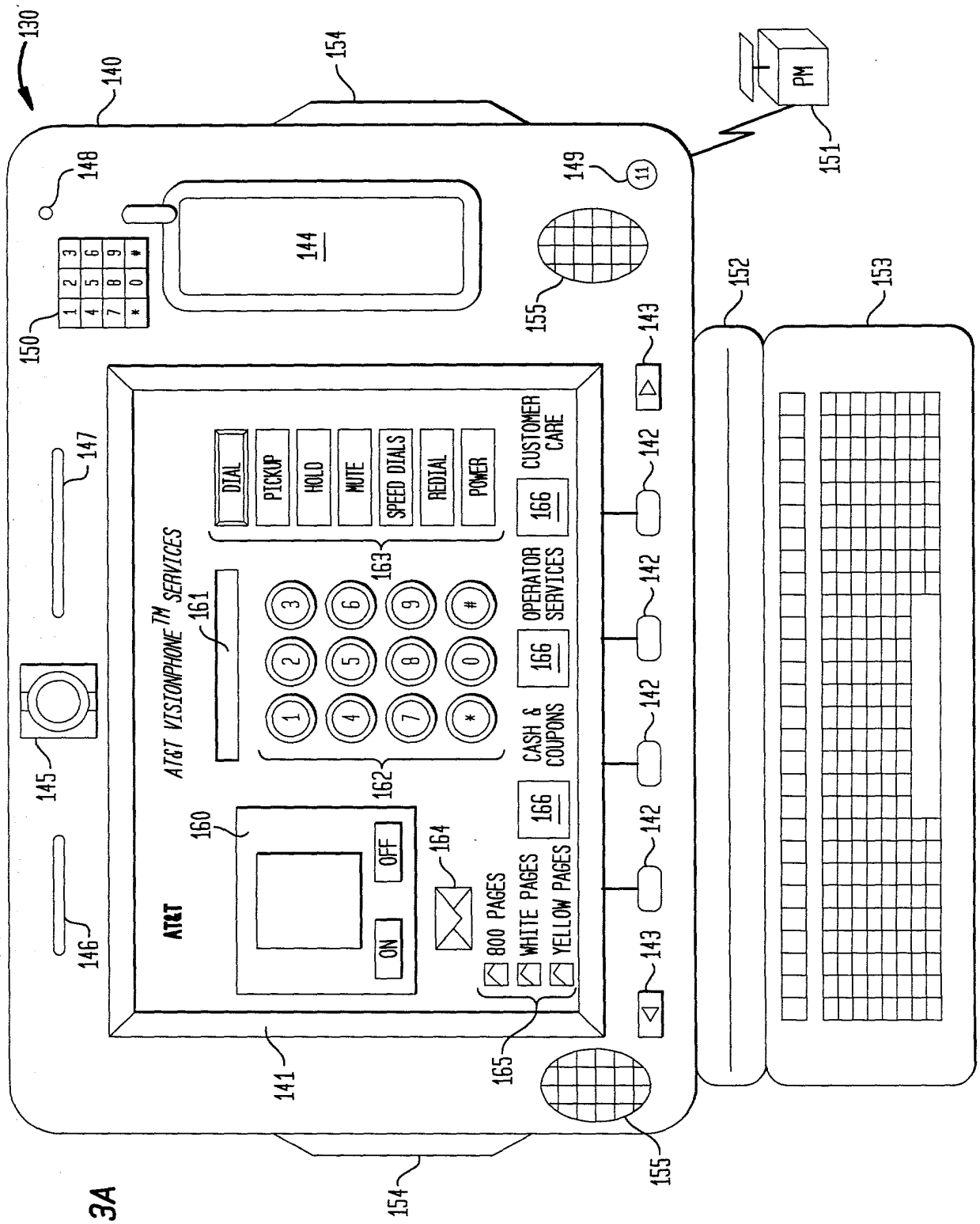

130
140
154
148
144
149
11
PM
151
150
155
152
153
143
147
142
DIAL
PICKUP
HOLD
MUTE
SPEED DIALS
REDIAL
POWER
CUSTOMER CARE
166
OPERATOR SERVICES
CASH & COUPONS
AT&T VISIONPHONE™ SERVICES
161
163
162
145
160
164
AT&T
ON
OFF
800 PAGES
WHITE PAGES
YELLOW PAGES
146
141
165

FIG. 3A

FIG. 3B

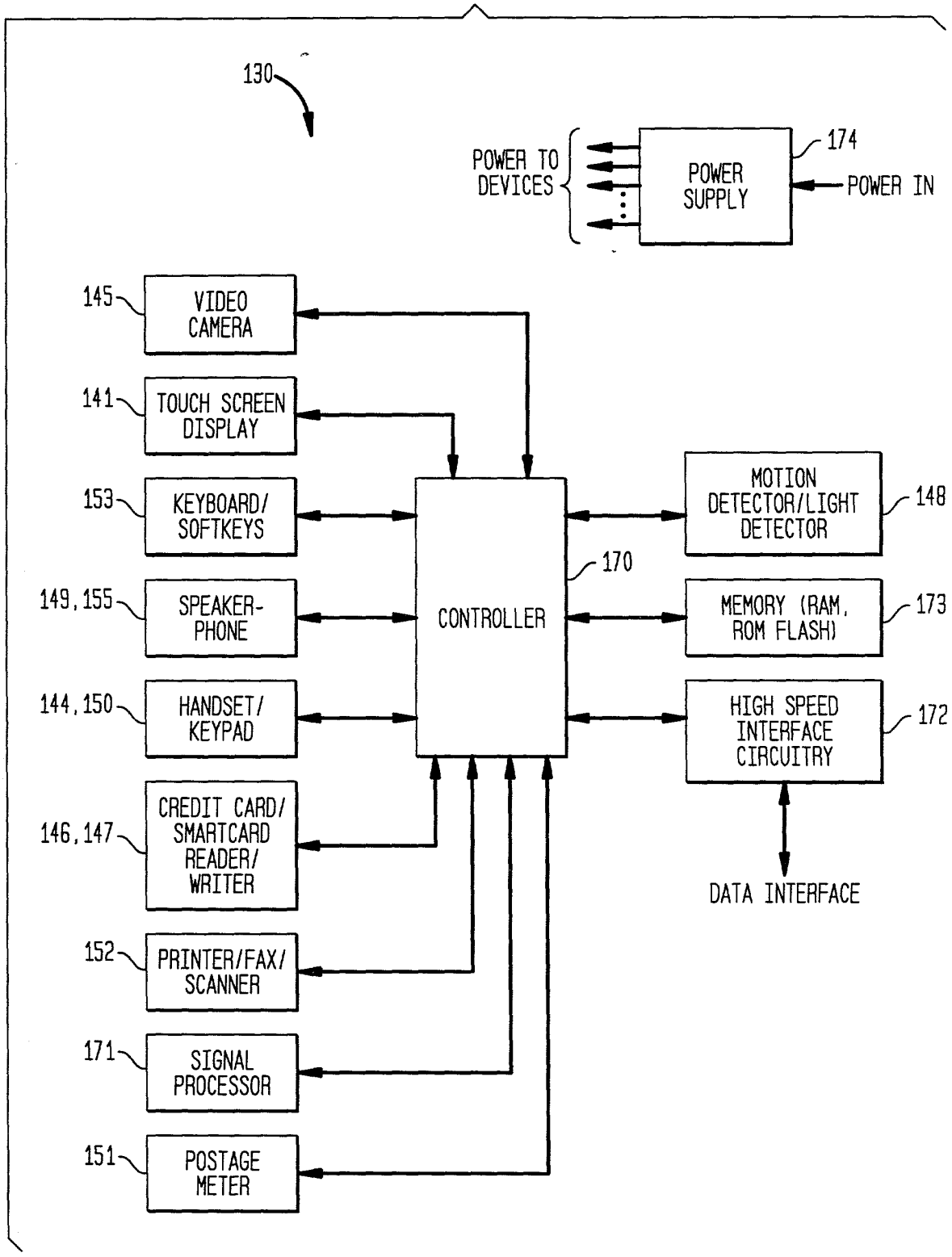

130
POWER TO DEVICES
POWER SUPPLY
174
POWER IN
145
VIDEO CAMERA
141
TOUCH SCREEN DISPLAY
153
KEYBOARD/ SOFTKEYS
149, 155
SPEAKER-PHONE
144, 150
HANDSET/ KEYPAD
146, 147
CREDIT CARD/ SMARTCARD READER/ WRITER
152
PRINTER/FAX/ SCANNER
171
SIGNAL PROCESSOR
151
POSTAGE METER
CONTROLLER
170
MOTION DETECTOR/LIGHT DETECTOR
148
MEMORY (RAM, ROM FLASH)
173
HIGH SPEED INTERFACE CIRCUITRY
172
DATA INTERFACE

FIG. 4A

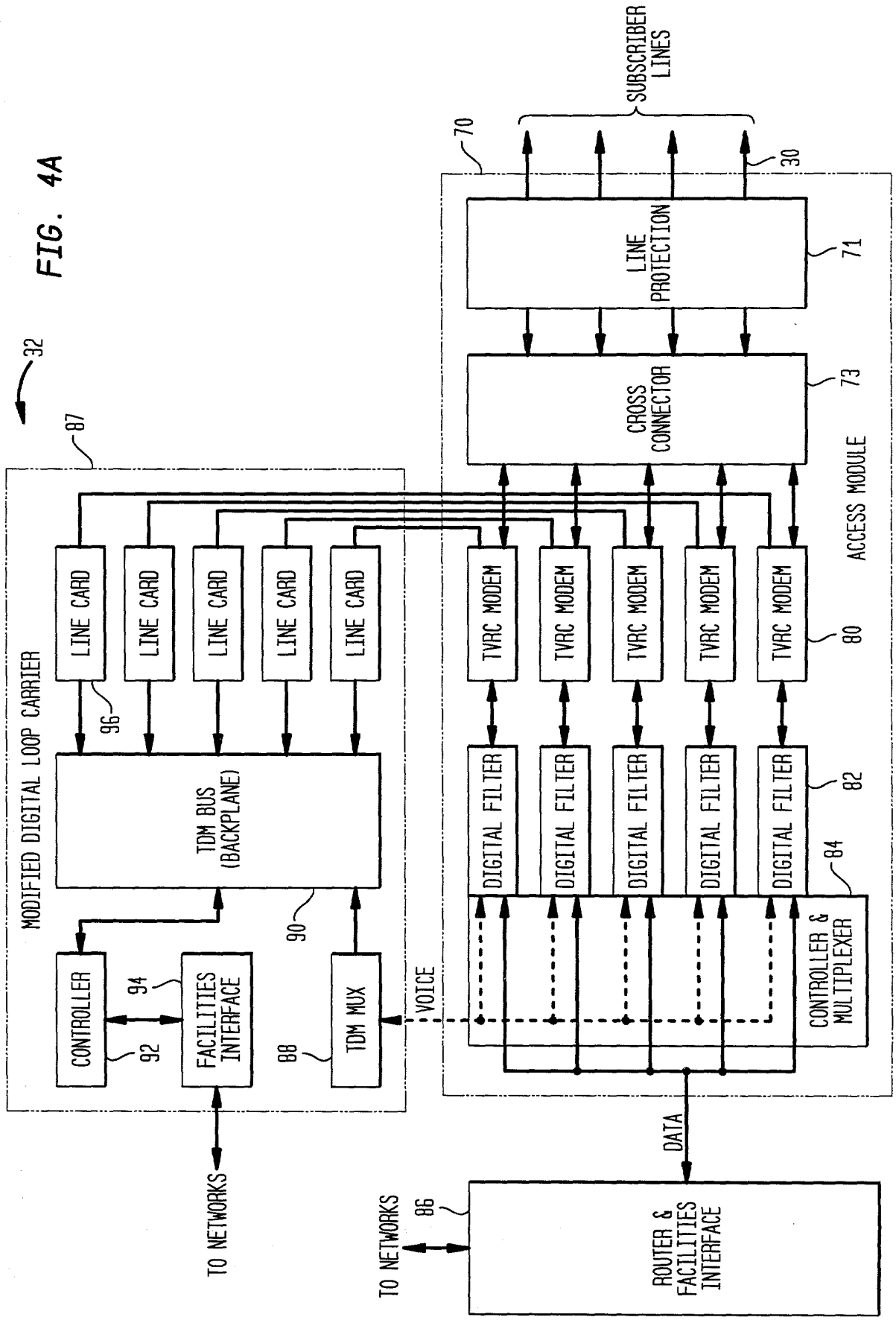

32
87
MODIFIED DIGITAL LOOP CARRIER
LINE CARD
LINE CARD
LINE CARD
LINE CARD
LINE CARD
96
TDM BUS (BACKPLANE)
90
CONTROLLER
92
94
FACILITIES INTERFACE
88
TDM MUX
VOICE
TO NETWORKS
SUBSCRIBER LINES
70
30
LINE PROTECTION
71
CROSS CONNECTOR
73
ACCESS MODULE
TVRC MODEM
TVRC MODEM
TVRC MODEM
TVRC MODEM
TVRC MODEM
80
DIGITAL FILTER
DIGITAL FILTER
DIGITAL FILTER
DIGITAL FILTER
DIGITAL FILTER
82
84
CONTROLLER & MULTIPLEXER
DATA
TO NETWORKS
86
ROUTER & FACILITIES INTERFACE

FIG. 4B

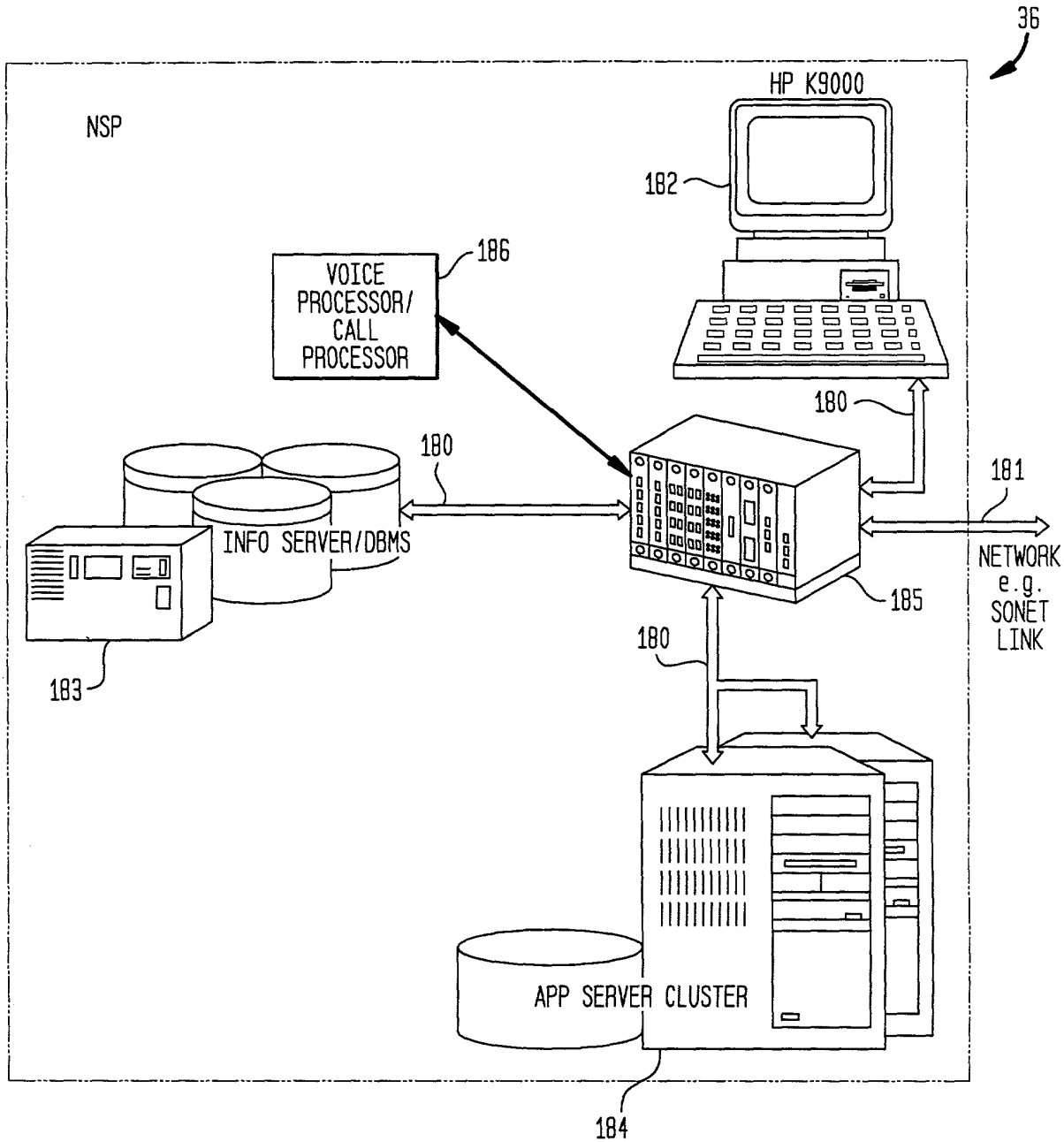

36
NSP
HP K9000
182
186
VOICE PROCESSOR/ CALL PROCESSOR
180
180
181
INFO SERVER/DBMS
NETWORK e.g. SONET LINK
185
180
183
APP SERVER CLUSTER
184

FIG. 5

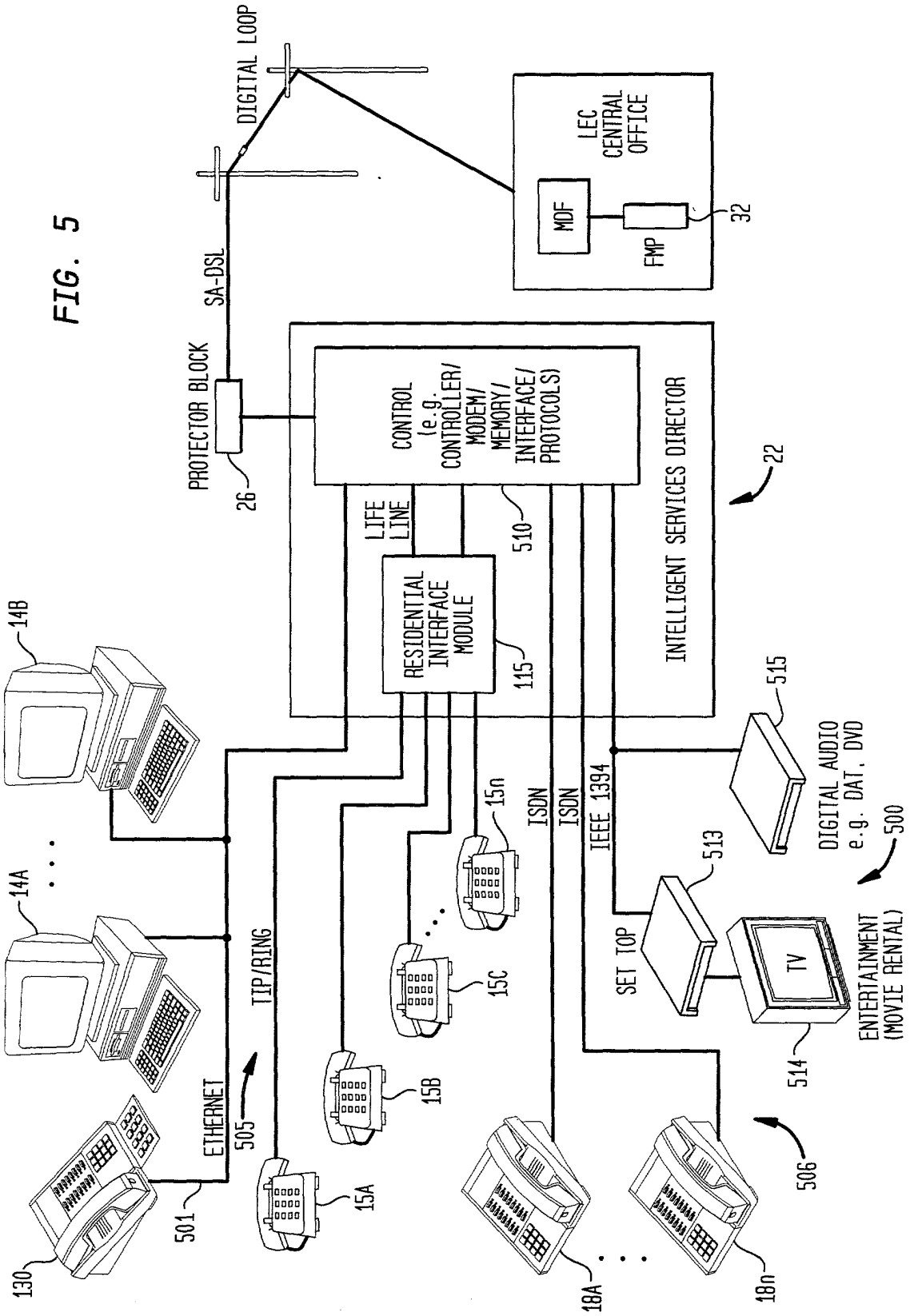

DIGITAL LOOP
SA-DSL
LEC CENTRAL OFFICE
MDF
FMP
32
PROTECTOR BLOCK
26
CONTROL (e.g. CONTROLLER/ MODEM/ MEMORY/ INTERFACE/ PROTOCOLS)
510
LIFE LINE
RESIDENTIAL INTERFACE MODULE
115
INTELLIGENT SERVICES DIRECTOR
22
14B
14A
15n
15C
15B
15A
ETHERNET
505
TIP/RING
ISDN
ISDN
IEEE 1394
515
DIGITAL AUDIO e.g. DAT, DVD
500
513
SET TOP
TV
ENTERTAINMENT (MOVIE RENTAL)
514
506
501
130
18A
18n

FIG. 6A

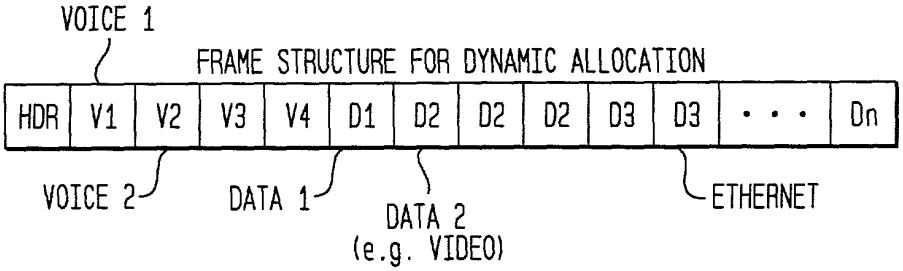
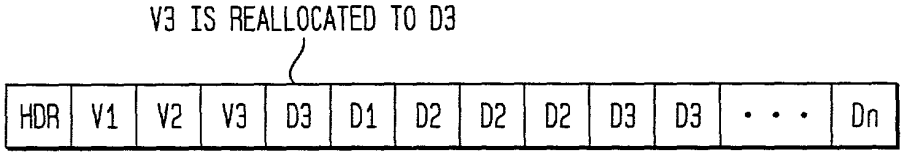


FIG. 6B



HDR - HEADER CONTAINING CONTROL INFORMATION
IN THIS EXAMPLE, EACH SLOT IS A 64 Kbps TIME SLOT

FIG. 7A

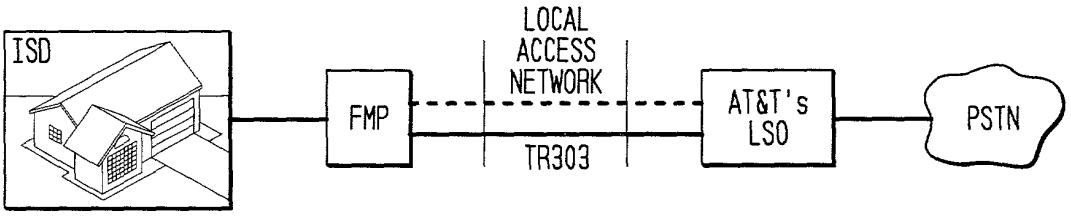
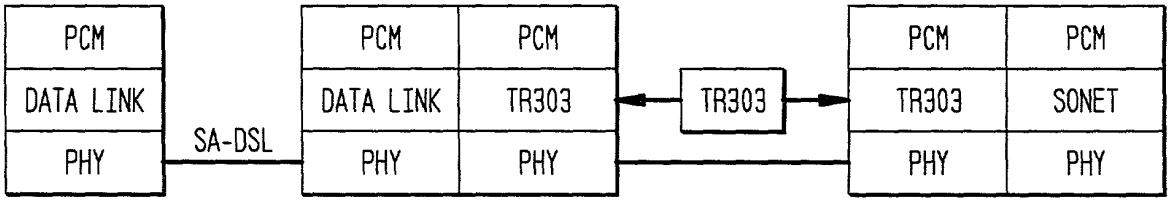


FIG. 7B



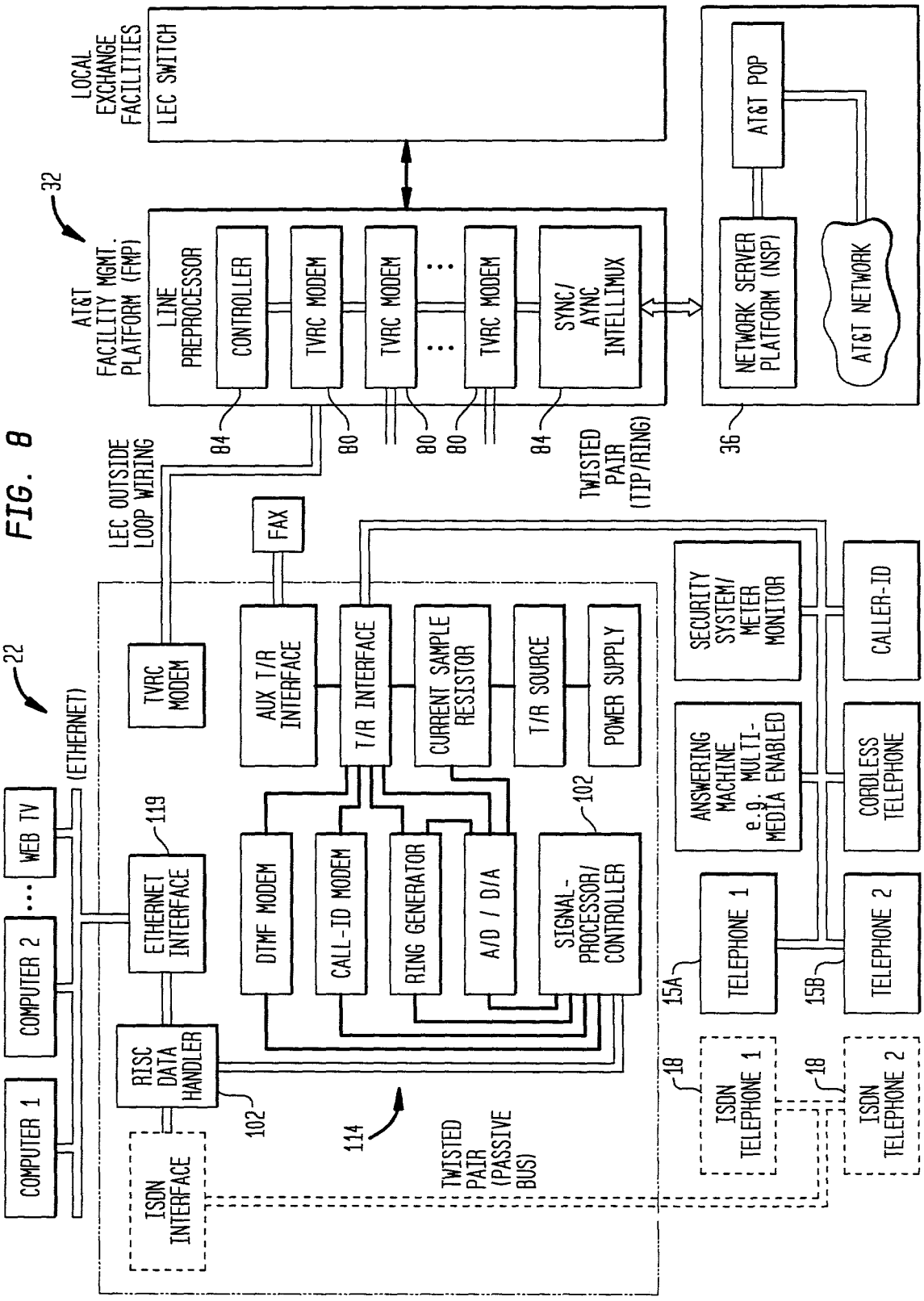
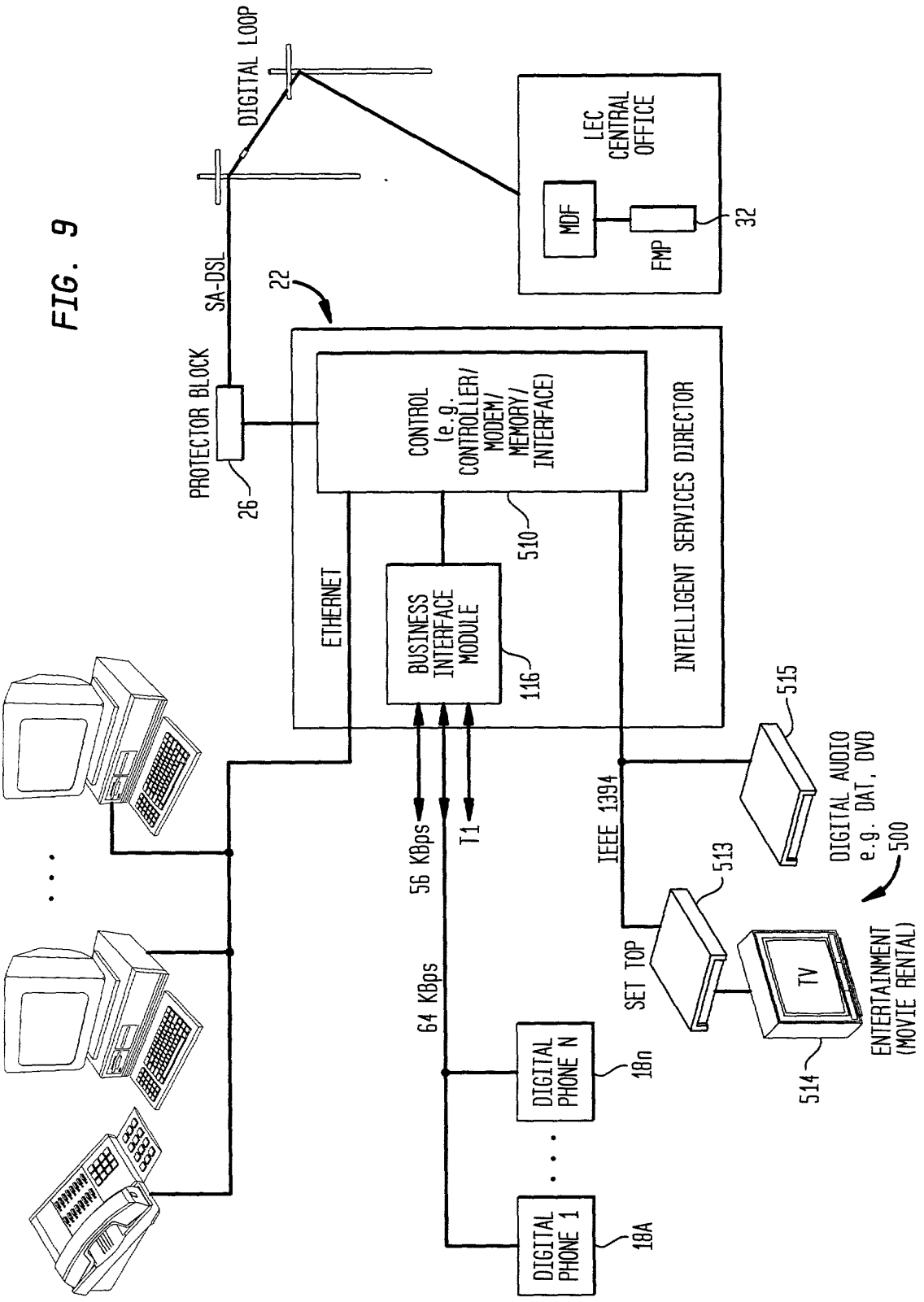

LOCAL EXCHANGE FACILITIES
LEC SWITCH
AT&T FACILITY MGMT. PLATFORM (FMP)
32
LINE PREPROCESSOR
CONTROLLER
TVRC MODEM
TVRC MODEM
TVRC MODEM
SYNC/ ASYNC INTELLIMUX
NETWORK SERVER PLATFORM (NSP)
AT&T POP
AT&T NETWORK
36
84
80
80
80
84
TWISTED PAIR (TIP/RING)
LEC OUTSIDE LOOP WIRING
FAX
22
TVRC MODEM
AUX T/R INTERFACE
T/R INTERFACE
CURRENT SAMPLE RESISTOR
T/R SOURCE
POWER SUPPLY
SECURITY SYSTEM/ METER MONITOR
CALLER-ID
ANSWERING MACHINE e.g. MULTI-MEDIA ENABLED
CORDLESS TELEPHONE
(ETHERNET)
WEB TV
119
ETHERNET INTERFACE
DTMF MODEM
CALL-ID MODEM
RING GENERATOR
A/D / D/A
SIGNAL-PROCESSOR/ CONTROLLER
102
COMPUTER 2
RISC DATA HANDLER
102
15A
TELEPHONE 1
15B
TELEPHONE 2
COMPUTER 1
ISDN INTERFACE
114
TWISTED PAIR (PASSIVE BUS)
18
ISDN TELEPHONE 1
18
ISDN TELEPHONE 2

FIG. 8

FIG. 9


DIGITAL LOOP
LEC CENTRAL OFFICE
MDF
FMP
32
SA-DSL
22
PROTECTOR BLOCK
26
CONTROL (e.g. CONTROLLER/ MODEM/ MEMORY/ INTERFACE)
510
ETHERNET
BUSINESS INTERFACE MODULE
116
INTELLIGENT SERVICES DIRECTOR
56 KBps
T1
64 KBps
IEEE 1394
515
DIGITAL AUDIO e.g. DAT, DVD
500
513
SET TOP
TV
ENTERTAINMENT (MOVIE RENTAL)
514
DIGITAL PHONE N
18n
DIGITAL PHONE 1
18A

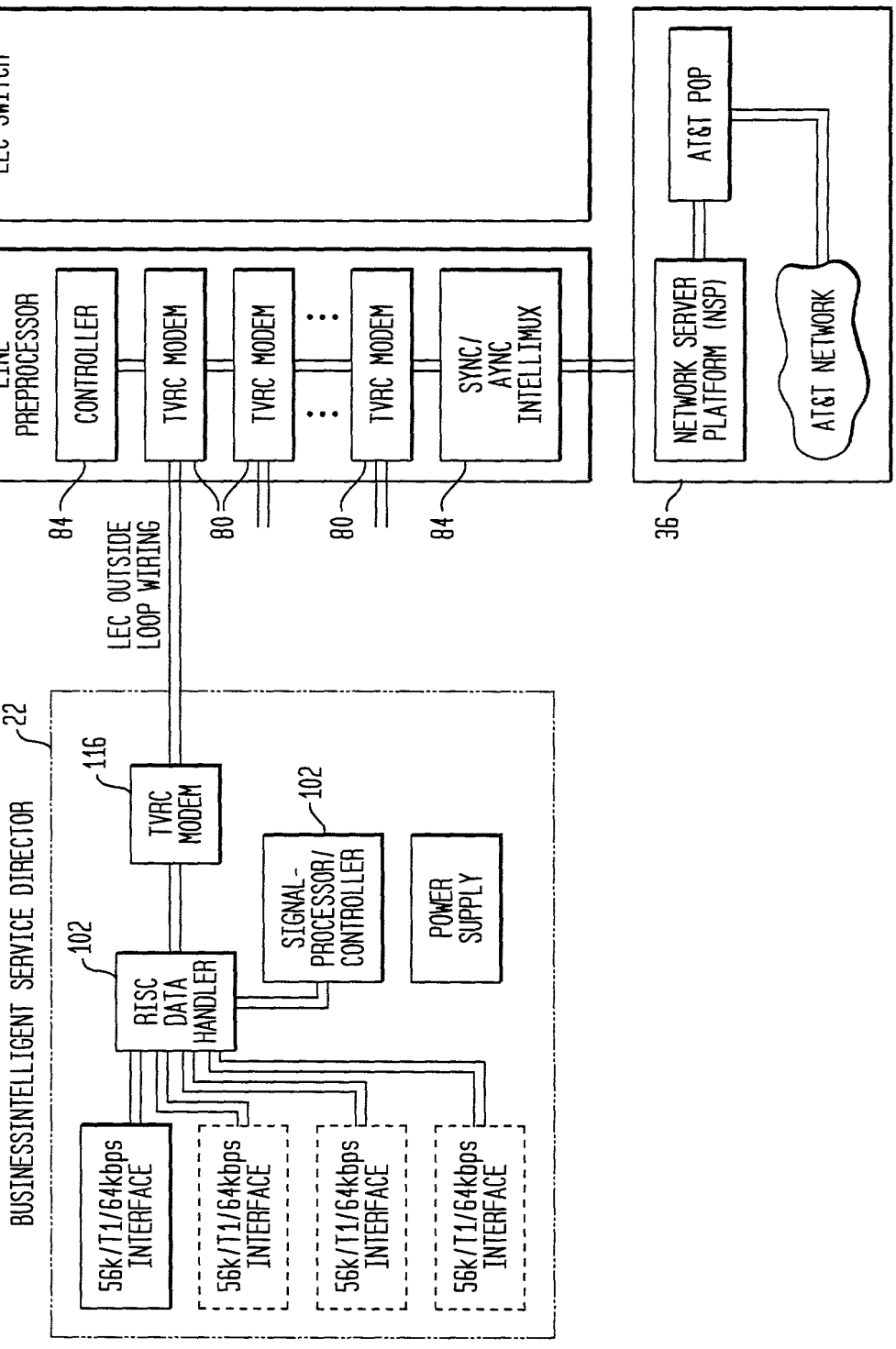

LOCAL EXCHANGE FACILITIES
LEC SWITCH
AT&T FACILITY MGMT. PLATFORM (FMP)
32
LINE PREPROCESSOR
CONTROLLER
TVRC MODEM
TVRC MODEM
TVRC MODEM
SYNC/ AYNC INTELLIMUX
84
80
80
84
LEC OUTSIDE LOOP WIRING
NETWORK SERVER PLATFORM (NSP)
AT&T POP
AT&T NETWORK
36
BUSINESSINTELLIGENT SERVICE DIRECTOR
22
116
TVRC MODEM
102
SIGNAL-PROCESSOR/ CONTROLLER
102
RISC DATA HANDLER
POWER SUPPLY
56k/T1/64kbps INTERFACE
56k/T1/64kbps INTERFACE
56k/T1/64kbps INTERFACE
56k/T1/64kbps INTERFACE

FIG. 10

FIG. 11

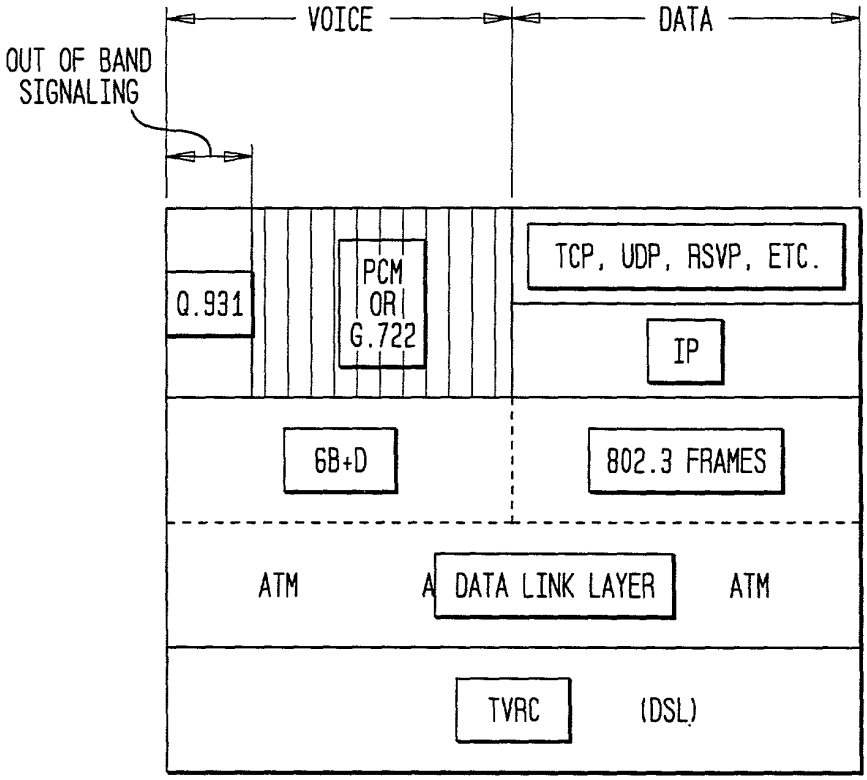
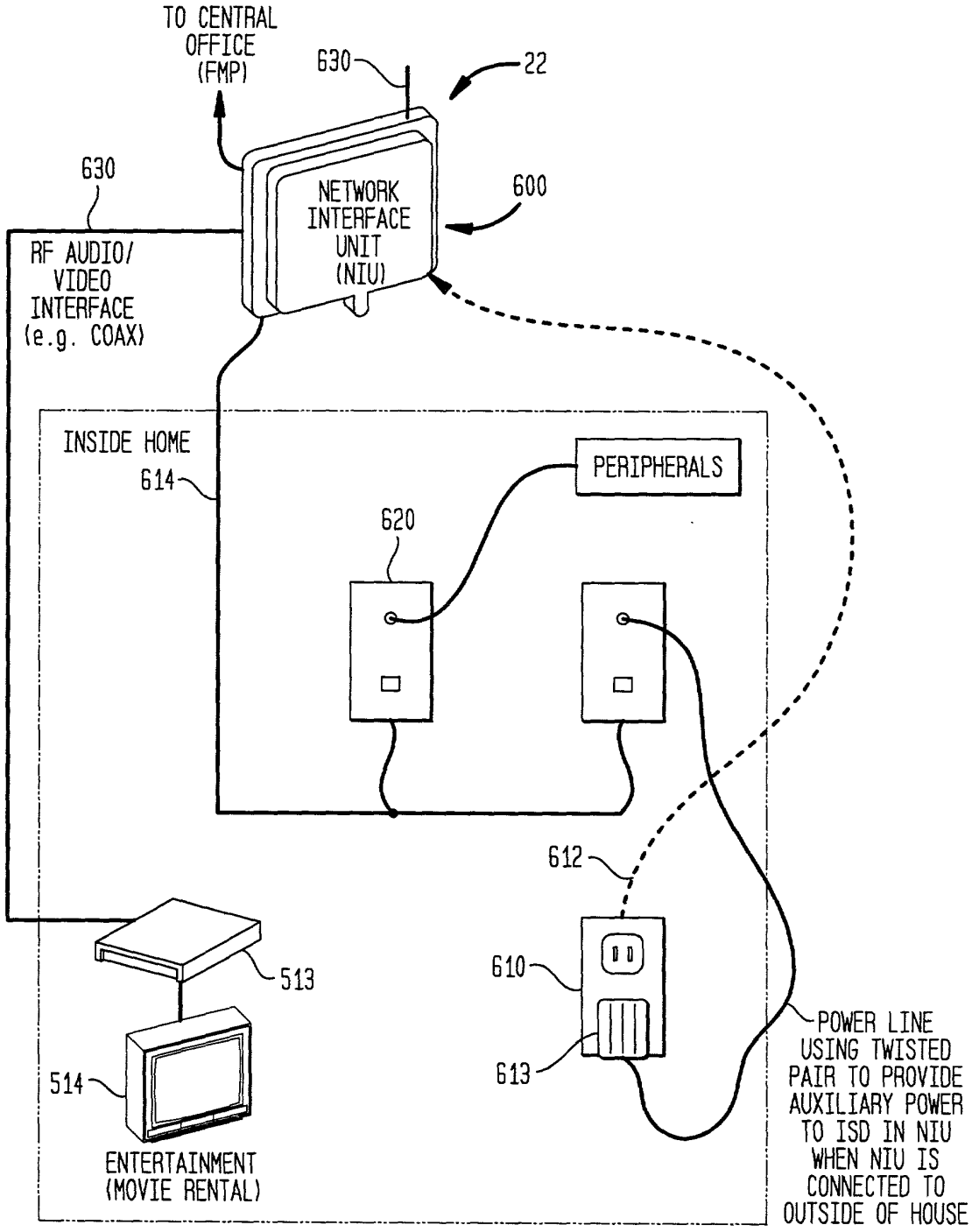

VOICE
DATA
OUT OF BAND SIGNALING
Q.931
PCM OR G.722
TCP, UDP, RSVP, ETC.
IP
6B+D
802.3 FRAMES
ATM
DATA LINK LAYER
ATM
TVRC
(DSL)

FIG. 12


TO CENTRAL OFFICE (FMP)
630
22
630
NETWORK INTERFACE UNIT (NIU)
600
RF AUDIO/ VIDEO INTERFACE (e.g. COAX)
INSIDE HOME
614
PERIPHERALS
620
612
513
610
514
613
ENTERTAINMENT (MOVIE RENTAL)
POWER LINE USING TWISTED PAIR TO PROVIDE AUXILIARY POWER TO ISD IN NIU WHEN NIU IS CONNECTED TO OUTSIDE OF HOUSE